US Army Medical Research and Materiel

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Methods for Treating Antibiotic-Resistant Infections

This invention provides a method using novel compounds for treating antibiotic-resistant infections, particularly those caused by bacteria, including *Mycobacteria*, and fungi. A preferred group of compositions of the invention contain the compounds pyridyl, quinolyl, or benzoquinolyl ring systems as active agents. The ring systems are substituted on the nitrogen-containing ring at the carbon opposite the nitrogen by a carbon bound to an oxygen. Preferred compounds of the invention are those wherein the quinolyl ring system has at least one electron-rich substituent on the quinolyl ring system.

The compounds were tested, in microtiter plates, against gram-positive bacteria including methicillin-susceptible and resistant Staphylococci, Streptococci, Pneumococci and gram-negative bacteria, including *Enterobacteriaceae*, *Pseudomonas*, *Hemophilus* and *Neisseria*. Susceptibility tests for *Candida* species and related fungi were performed in broth. Susceptibility tests for *Mycobacterium* were performed according to standard methods of the National Institutes of Health. The dialkyl compounds were shown to be active against *Mycobacteria*, but not against gram-negative organisms or other bacteria. Other compounds were, however, shown to be useful for treating gram-positive and gram-negative bacteria, and fungi.

The use of antibiotics to treat infections has been increasingly compromised by the development of resistant strains of microorganisms. It is essential to develop new such as those described in the invention to control these pathogens.

Features and advantages:

- **Shown effective against strains which were resistant to other antimicrobial agents**
- **Lipid solubility of compounds could allow drugs to enter cells and the central nervous system**
- **Potentially administered using parenteral, oral, buccal, nasal, or endotracheal routes**
- **Potentially applied topically to the epithelial tissue**
- **Patent Status**
- **use**

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Point of Contact

Dr. Paul C. Mele
Director, Office of Research and Technology Applications
USAMRMC, MCMR-ZA-J
504 Scott St., Frederick, MD 21702-5012
E-mail: usamrmcorta@amedd.army.mil
Voice: 301-619-6664/2065/7219 Fax: 301-619-5034

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